Research Methodology
CHAPTER - III

METHODOLOGY

This chapter consists methods of drawing sample for the study and procedure of analysing collected data required in fulfilment of the set objectives.

Sampling Technique:

Being an economically backward district Ballia has been selected for this study. Agriculture including animal rearing is the main enterprise of the inhabitants of the district. There are rare options for alternate source of labour absorption except agriculture. Animal rearing provides a best employment potential and besides producing milk and milk products, it stabilizes the farm income. In view of the abundance of Agriculture labour force due to high population density the crop cultivation and animal rearing are the most important avenues of labour absorption and income earning in this district. In view of the above mentioned factors district Ballia was purposively selected for the study. Multistage stratified, random sampling procedure was adopted for taking sample for this study.

1. Blocks: Out of 17 blocks in the district, 03 were taken randomly for the detailed survey. The sample blocks were Bansdih, Hanumanganj and Nagra.

2. Villages: Villages lying in the selected blocks were enlisted in respect of number of farming households with the help of block officials.
Then after, a sample of 2 village from each selected block was taken randomly in the sample. Thus, six villages were in the sample for detailed study.

3. Farming Households: At the ultimate stage of sampling farming households of each selected village were enlisted in respect of size of holding and number of milch animals reared with the help of village Lekhpal and Gram Pradhan. Those farming households were eliminated from the list who were not rearing milch animals. Thus, only milch animals rearing farm households were included in the final list for selection of sample. The farming households finally included in the list were stratified in respect of size of holding. Then after, about 15 farming holds from each selected village were taken randomly in the sample with proportional distribution on the strata of various groups of size of holdings. Thus, 94 farm households were taken in totality for detailed study.

Table No. 3.1
Sample Households

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Blocks</th>
<th>Village</th>
<th>Sample Farms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Marginal</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>Bansdih</td>
<td>Kharauni</td>
<td>05</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Khewasar</td>
<td>06</td>
</tr>
<tr>
<td>2</td>
<td>Hanumangaj</td>
<td>Sargarpli</td>
<td>05</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Middha</td>
<td>05</td>
</tr>
<tr>
<td>3</td>
<td>Nagra</td>
<td>Khari</td>
<td>06</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sultanpur</td>
<td>07</td>
</tr>
<tr>
<td>Total</td>
<td>03</td>
<td>06</td>
<td>34</td>
</tr>
</tbody>
</table>
Method of Analysis

Tabular and cross-sectional statistical tools were used in the present study to analyse the collected data. Presentation of averages, standard deviation, coefficient of variation etc. were based on Tabular analysis.

1. Significance of mean difference was tested by Fisher's 't' test using following formula–

\[
t = \frac{X_1 - X_2}{\sqrt{\frac{C^2}{n_1 - 1} + \frac{1}{n_2}}}
\]

\[
df = (n_1 - 1) + (n_2 - 1)
\]

2. For cost and Return analysis of different enterprises maintained on the sample farms concept used in farm management studies were adopted in the tabular analysis.

3. Estimation of Output:

Farm output from different enterprises was estimated by multiplying the quantities of output from different sources by their respective market prices and then adding the farm output from each enterprise the gross farm output was estimated in respect of each farm size group.

4. To study farm income derived from various enterprises kept on the farm, concepts of different type of farm income used in farm management studies were adopted.

5. To estimate responsiveness of resultant factor to explanatory variables in each of the enterprises maintained on the farm, cobb-Douglas Production function was used.
The function-

\[ y = a \times x_1^{b_1}, x_2^{b_2}, x_3^{b_3}, \ldots, x_n^{b_n} \]

Where

- \( y \) represents gross value derived from enterprise i.e. dependent factor
- \( a \) = intercept
- \( x_i, x_n \) = explanatory variable
- \( b_i \) = elasticities

6. Test of significance of elasticities were performed by 't' test.

\[
t = \frac{b_i}{\text{S.E. of } b_i}
\]

\[
\text{S.E. of } b_i = \sqrt{\frac{\Sigma y^2 - \Sigma (x_i y)^2}{\Sigma x_i^2} \frac{\Sigma x_i^2}{n-k} \Sigma x_i^2}
\]

**Reference Period:**

Secondary data pertaining to the year 1999 to 2004 were used in this study. The primary informations were collected for the period of two agricultural years i.e., 2002-03 and 2003-04.